

2010 Mississippi Curriculum Framework

Postsecondary Meat Merchandising Technology

(Program CIP: 12.0506 – Meat Cutting/Meat Cutter)

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Standards in this document are based on information from the following organizations:

The National Restaurant Association's ServSafe Course Content

National Restaurant Association materials used with
permission.

Related Academic Standards

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Preface

Postsecondary Meat Merchandising Technology Research Synopsis

Articles, books, Web sites, and other materials listed at the end of each course were considered during the revision process. The textbooks *Principles of Meat Science*, *Food for Fifty*, *Fish and Seafood*, *Meat Identification Fabrication*, and *The Meat We Eat*; journals and magazines such as *The National Provisioner*, *Meat Processing*, and *The Packaging Digest*; and organizations including The American Meat Institute, National FFA, American Association of Meat Processors, and the U.S. Department of Labor were especially useful in providing insight into trends and issues in the field. These references are suggested for use by instructors and students during the study of the topics outlined.

Industry advisory team members from colleges throughout the state were asked to give input related to changes to be made to the curriculum framework. Specific comments related to soft skills needed in this program included a strong work ethic, manners, respect, responsibility, communication skills, good attitude, and punctuality. Occupation-specific skills stated included performing calculations, knowledge of cuts, figuring markup and profit margin, computer skills, and charting. Safety practices emphasized included equipment safety and sanitation.

Instructors from colleges throughout the state were also asked to give input on changes to be made to the curriculum framework. Changes suggested for the curriculum included addition of new textbooks and more time for the food safety course.

Curriculum

The following national standards were referenced in each course of the curriculum:

- *CTB/McGraw-Hill LLC Tests of Adult Basic Education, forms 7 and 8 Academic Standards*
- *21st Century Skills*
- *National Restaurant Association's ServSafe Course Content*

Industry and instructor comments, along with current research, were considered by the curriculum revision team during the revision process; and changes were made as needed and appropriate. Many of the skills and topics noted in the research were already included in the curriculum framework. Specific changes made to the curriculum at the April 27–29, 2010, curriculum revision meeting included the following:

- Competencies and objectives were reviewed to ensure accuracy and appropriateness.
- ServSafe industry standards were added at the competency level.
- Depth of Knowledge (DOK) levels were added to the objective level.
- Food Safety (MTV 1521) is now Food Safety (MTV 1522). An hour of lecture time was added to this course.
- The course name for MTV 1514 changed from Catering and Value Added Products to Catering, Food Preparation, and Value Added Products.
- Resources were added to all courses.
- The Recommended Tools and Equipment list was reviewed.

Assessment

Students will be assessed using the *Postsecondary Meat Merchandising Technology MS-CPAS2 Test*.

Professional Learning

It is suggested that instructors participate in professional learning related to the following concepts:

- How to use the program Blackboard site
- Differentiated instruction – To learn more about differentiated instruction, please go to http://www.paec.org/teacher2teacher/additional_subjects.html, and click on Differentiated Instruction. Work through this online course, and review the additional resources.

Articulation

There is no articulation for this course at this time.

Foreword

As the world economy continues to evolve, businesses and industries must adopt new practices and processes in order to survive. Quality and cost control, work teams and participatory management, and an infusion of technology are transforming the way people work and do business. Employees are now expected to read, write, and communicate effectively; think creatively, solve problems, and make decisions; and interact with each other and the technologies in the workplace. Vocational–technical programs must also adopt these practices in order to provide graduates who can enter and advance in the changing work world.

The curriculum framework in this document reflects these changes in the workplace and a number of other factors that impact local vocational–technical programs. Federal and state legislation calls for articulation between high school and community college programs, integration of academic and vocational skills, and the development of sequential courses of study that provide students with the optimum educational path for achieving successful employment. National skills standards, developed by industry groups and sponsored by the U.S. Department of Education and Labor, provide vocational educators with the expectations of employers across the United States. All of these factors are reflected in the framework found in this document.

Referenced throughout the courses of the curriculum are the 21st Century Skills, which were developed by the Partnership for 21st Century Skills, a group of business and education organizations concerned about the gap between the knowledge and skills learned in school and those needed in communities and the workplace. A portion of the 21st Century Skills addresses learning skills needed in the 21st century, including information and communication skills, thinking and problem-solving skills, and interpersonal and self-directional skills. The need for these types of skills has been recognized for some time, and the 21st Century Skills are adapted in part from the 1991 report from the U.S. Secretary of Labor’s Commission on Achieving Necessary Skills (SCANS). Another important aspect of learning and working in the 21st century involves technology skills, and the International Society for Technology in Education, developer of the National Educational Technology Standards (NETS), was a strategic partner in the Partnership for 21st Century Skills.

Each postsecondary program of instruction consists of a program description and a suggested sequence of courses that focus on the development of occupational competencies. Each vocational–technical course in this sequence has been written using a common format, which includes the following components:

- Course Name – A common name that will be used by all community and junior colleges in reporting students
- Course Abbreviation – A common abbreviation that will be used by all community and junior colleges in reporting students
- Classification – Courses may be classified as the following:
 - Vocational–technical core – A required vocational–technical course for all students

- Area of concentration (AOC) core – A course required in an area of concentration of a cluster of programs
 - Vocational–technical elective – An elective vocational–technical course
 - Related academic course – An academic course that provides academic skills and knowledge directly related to the program area
 - Academic core – An academic course that is required as part of the requirements for an associate’s degree
- Description – A short narrative that includes the major purpose(s) of the course and the recommended number of hours of lecture and laboratory activities to be conducted each week during a regular semester
- Prerequisites – A listing of any courses that must be taken prior to or on enrollment in the course
- Corequisites – A listing of courses that may be taken while enrolled in the course
- Competencies and Suggested Objectives – A listing of the competencies (major concepts and performances) and of the suggested student objectives that will enable students to demonstrate mastery of these competencies

The following guidelines were used in developing the program(s) in this document and should be considered in compiling and revising course syllabi and daily lesson plans at the local level:

- The content of the courses in this document reflects approximately 75% of the time allocated to each course. The remaining 25% of each course should be developed at the local district level and may reflect the following:
 - Additional competencies and objectives within the course related to topics not found in the state framework, including activities related to specific needs of industries in the community college district
 - Activities that develop a higher level of mastery on the existing competencies and suggested objectives
 - Activities and instruction related to new technologies and concepts that were not prevalent at the time the current framework was developed or revised
 - Activities that implement components of the Mississippi Tech Prep initiative, including integration of academic and vocational–technical skills and course work, school-to-work transition activities, and articulation of secondary and postsecondary vocational–technical programs
 - Individualized learning activities, including work-site learning activities, to better prepare individuals in the courses for their chosen occupational areas
- Sequencing of the course within a program is left to the discretion of the local district. Naturally, foundation courses related to topics such as safety, tool and equipment usage, and other fundamental skills should be taught first. Other courses related to specific skill areas and related academics, however, may be sequenced to take advantage of seasonal and climatic conditions, resources located outside of the school, and other factors.

- Programs that offer an Associate of Applied Science degree must include a minimum 15-semester-credit-hour academic core. Specific courses to be taken within this core are to be determined by the local district. Minimum academic core courses are as follows:
 - 3 semester credit hours Math/Science Elective
 - 3 semester credit hours Written Communications Elective
 - 3 semester credit hours Oral Communications Elective
 - 3 semester credit hours Humanities/Fine Arts Elective
 - 3 semester credit hours Social/Behavioral Science Elective

It is recommended that courses in the academic core be spaced out over the entire length of the program so that students complete some academic and vocational–technical courses each semester. Each community or junior college has the discretion to select the actual courses that are required to meet this academic core requirement.

- In instances in which secondary programs are directly related to community and junior college programs, competencies and suggested objectives from the high school programs are listed as baseline competencies. These competencies and objectives reflect skills and knowledge that are directly related to the community and junior college vocational–technical program. In adopting the curriculum framework, each community or junior college is asked to give assurances that:
 - Students who can demonstrate mastery of the baseline competencies do not receive duplicate instruction and
 - Students who cannot demonstrate mastery of this content will be given the opportunity to do so.
- The roles of the baseline competencies are to do the following:
 - Assist community and junior college personnel in developing articulation agreements with high schools.
 - Ensure that all community and junior college courses provide a higher level of instruction than their secondary counterparts.
- The baseline competencies may be taught as special introduction courses for 3 to 6 semester hours of institutional credit that will not count toward associate degree requirements. Community and junior colleges may choose to integrate the baseline competencies into ongoing courses in lieu of offering the introduction courses or may offer the competencies through special projects or individualized instruction methods.
- Technical elective courses have been included to allow community colleges and students to customize programs to meet the needs of industries and employers in their area.

In order to provide flexibility within the districts, individual courses within a framework may be customized by doing the following:

- Adding new competencies and suggested objectives
- Revising or extending the suggested objectives for individual competencies
- Integrating baseline competencies from associated high school programs

- Adjusting the semester credit hours of a course to be up 1 hour or down 1 hour (after informing the State Board for Community and Junior Colleges [SBCJC] of the change)

In addition, the curriculum framework as a whole may be customized by doing the following:

- Resequencing courses within the suggested course sequence
- Developing and adding a new course that meets specific needs of industries and other clients in the community or junior college district (with SBCJC approval)
- Utilizing the technical elective options in many of the curricula to customize programs

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Program Description

The Meat Merchandising Technology program is designed to prepare the student for entry-level employment in the various related phases of processing, marketing, and merchandising of meats; catering, food preparation; and value-added products. Students are given an opportunity to master the skills necessary for success in meat merchandising, which includes slaughtering, chilling, aging, quartering, and cutting and/or inspecting pork, beef, lamb, poultry, goats, wild game, and fish.

Mastery of the competencies listed in the Food Safety course will prepare the student to take the National Restaurant Association's ServSafe exam to become ServSafe Food Safety certified.

Industry standards referenced are based on the National Restaurant Association's *ServSafe Certification*.

Suggested Course Sequence*

Meat Merchandising Technology

FIRST YEAR

4 sch	Fundamentals of Meat Merchandising (MTV 1114)	4 sch	Display Pricing and Marketing Techniques I (MTV 1314)
4 sch	Identification of Wholesale and Retail Cuts (MTV 1214)	4 sch	Display Pricing and Marketing Techniques II (MTV 1324)
4 sch	Preparation of Wholesale and Retail Cuts (MTV 1224)	4 sch	Advanced Meat Merchandising I (MTV 1414)
4 sch	Merchandising of Poultry, Fish, Seafood, and Smoked Meats (MTV 1234)	4 sch	Advanced Meat Merchandising II (MTV 1424)
		2 sch	Food Safety (MTV 1522)
<hr/> 16 sch		<hr/> 18 sch	

SUMMER SEMESTER

4 sch	Catering, Food Preparation, and Value-Added Products (MTV 1514)
1–6 sch	Vocational–Technical Elective**
<hr/> 5–10 sch	

* Students who lack entry-level skills in math, English, science, and so forth will be provided related studies.

APPROVED ELECTIVES**

Introductory Computer Course
Work-Based Learning I, II, III, IV, V, and VI [WBL 191(1-3), WBL 192(1-3), WBL 193(1-3), WBL 291(1-3), WBL 292(1-3), and WBL 293(1-3)]

Meat Merchandising Technology Courses

Course Name: Fundamentals of Meat Merchandising

Course Abbreviation: MTV 1114

Classification: Vocational–Technical Core

Description: This course covers the basic fundamentals of meat merchandising including career opportunities, safety requirements, sanitation, equipment and its maintenance, and government regulations. (4 sch: 8-hr lab)

Prerequisite: None

Competencies and Suggested Objectives	
1. Discuss career opportunities in meat cutting, packing, and processing professions.	
a. Define the job of meat cutter. (DOK 1)	
b. Discuss the various jobs available in the meat cutting, packing, and processing professions. (DOK 1)	
c. Discuss leadership opportunities and activities available from student and professional organizations in the school and community. (DOK 1)	
2. Explain general meat laboratory safety requirements. SS1, SS2, SS3, SS4, SS5, SS7, SS8, SS10, SS11, SS12	
a. List and practice safety rules and procedures. (DOK 2)	
b. Explain the importance of safety in using the tools and equipment involved in meat merchandising. (DOK 1)	
3. Discuss sanitation as it applies to a meat cutting facility. SS1, SS2, SS3, SS4, SS5, SS7, SS8, SS10, SS11, SS12	
a. Describe sanitary operations of a meat cutting facility. (DOK 1)	
b. Describe state and federal inspection guidelines as they apply to meat processing facilities. (DOK 1)	
c. Explain the term microorganisms. (DOK 1)	
d. Describe how bacteria and other microorganisms can multiply and cause spoilage of fresh, vacuum packed, and frozen meat. (DOK 2)	
e. List the equipment in a cutting room that needs cleaning every day. (DOK 1)	
f. Define the term disinfectant. (DOK 1)	
g. Describe the benefits of a rail system. (DOK 1)	
h. Select and use proper aprons, gloves, hard hats, eye protection, hair nets, rubber boots, and other equipment. (DOK 2)	
i. Disinfect aprons and rubber boots after each use. (DOK 1)	
4. Identify and properly use equipment for meat cutting, packing, and processing. SS1, SS2, SS3, SS4, SS5, SS7, SS8, SS10, SS11, SS12	
a. Identify equipment used in a meat laboratory including a band saw, grinder, mixer, tenderizer, slicing machine, stuffer, pickle pump, and vacuum tumbler. (DOK 1)	
b. Assemble and disassemble equipment including band saw, grinder, mixer, tenderizer, slicing machine, stuffer, and pickle pump. (DOK 2)	
c. Identify and use other meat cutting equipment including knives, knife sharpener, steel	

	<p>and hone, stockinette, dead lock and tag, computerized scales and weighing items, vacuum packer, salinometer, squeegee equipment, patty machine, heat seal, cooler, freezer, rail system, tables, immobilizer, hoist, dehairing machine, skinning knife, and carcass split saw. (DOK 2)</p> <p>d. Use sterilizer for knives and steel. (DOK 1)</p>
5.	<p>Demonstrate equipment maintenance used in a meat cutting facility. SS1, SS2, SS3, SS4, SS5, SS7, SS8, SS10, SS11, SS12</p> <p>a. Maintain sharp knives including boning and butcher. (DOK 1)</p> <p>b. Perform equipment and maintenance procedures for grinder, slicer, band saw, and all other equipment in the meat laboratory. (DOK 2)</p> <p>c. Use proper disinfection procedures for cleaning tables after use. (DOK 1)</p> <p>d. Demonstrate proper hand-washing procedure after working in the meat cutting laboratory. (DOK 1)</p>
6.	<p>Maintain a safe and sanitary facility. SS1, SS2, SS3, SS4, SS5, SS7, SS8, SS10, SS11, SS12</p> <p>a. Wash and disinfect walls and floors. (DOK 1)</p> <p>b. Maintain a safe environment by wiping up spills, keeping aisles clear, and performing other tasks as appropriate. (DOK 1)</p>
7.	<p>Explain the standards by which red meat and poultry are graded. SS1, SS2, SS3, SS4, SS5, SS7, SS8, SS10, SS11, SS12</p> <p>a. List the factors used to quality grade beef, pork, lamb, and poultry. (DOK 2)</p> <p>b. List the quality and yield grades of beef and lamb carcasses. (DOK 2)</p> <p>c. List the grades of pork and poultry carcasses. (DOK 2)</p> <p>d. Define the term marbling, and list the degrees of marbling for beef carcasses. (DOK 2)</p> <p>e. Explain how age of the animal can affect beef carcass grades. (DOK 2)</p> <p>f. Explain how grades may affect meat prices. (DOK 2)</p> <p>g. Discuss at least three ways in which finish (fat) influences grade. (DOK 2)</p> <p>h. Explain the basic divisions for current grades and their relationship to wholesale and retail cuts. (DOK 2)</p> <p>i. Explain how the determination of beef and pork grades differs. (DOK 2)</p> <p>j. Grade several beef and pork carcasses at the cold storage meat plant. (DOK 2)</p>
8.	<p>Explain at what temperatures and times to properly store various meat cuts. SS1, SS2, SS3, SS4, SS5, SS7, SS8, SS10, SS11, SS12</p> <p>a. List the recommended storage times for frozen cuts of beef, pork, lamb, and poultry. (DOK 1)</p> <p>b. List the average shelf life of fresh cuts of beef, pork, lamb, and poultry. (DOK 1)</p> <p>c. Explain the steps and procedures most used by retail meat markets to extend the shelf life of fresh meats. (DOK 1)</p> <p>d. Describe how frozen meats are quick frozen and why this is done. (DOK 1)</p> <p>e. Discuss what temperatures are used to quick-freeze meat. (DOK 1)</p> <p>f. Cite the recommended temperatures for the display case, cooler, and storage freezer. (DOK 2)</p> <p>g. Explain how meat is rotated to make proper use of storage time and shelf time. (DOK 2)</p> <p>h. Explain why red meat and poultry are not stored together in the same cooler areas. (DOK 2)</p> <p>i. Explain why frozen beef can be stored for longer periods of time than frozen pork without appreciable loss of quality. (DOK 2)</p>

j.	Demonstrate the ability to properly rotate, store, and merchandise various cuts of red meat and poultry. (DOK 2)	
9.	Explain government regulations as they apply to meat merchandising. (DOK 1)	SS1, SS2, SS3, SS4, SS5, SS7, SS8, SS10, SS11, SS12, SS14
a.	Explain which government agency is in charge of checking sanitation in retail meat markets. (DOK 1)	
b.	Explain which government agency is in charge of checking slaughtering and processing red meat and poultry plants. (DOK 1)	
c.	Discuss the importance of waiting periods for various medications prior to slaughter. (DOK 2)	
d.	Explain the importance of verification of animal health prior to slaughter. (DOK 2)	
e.	Explain how labeling of red meat items is controlled. (DOK 1)	
f.	Define meat inspection, lay inspector, and vet inspector. (DOK 1)	
g.	Explain how inspection helps protect the health of meat consumers. (DOK 2)	
h.	Describe methods of disposing of offal. (DOK 2)	
10.	Describe sanitary operations of meat cutting facilities outlined in Hazards Analysis Critical Control Point (HACCP) standards. (DOK 1)	SS1, SS2, SS3, SS4, SS5, SS7, SS8, SS10, SS11, SS12
a.	Discuss the major elements related to food safety inspection service outlined in the HACCP proposal. (DOK 1)	
b.	Explain Sanitation Standing Operating Procedures (SSOP) conducted daily, before, and during operations sufficient to prevent direct contamination or adulteration of product. (DOK 1)	
c.	Discuss how to develop an HACCP plan including monitoring requirements and corrective action. (DOK 1)	
d.	Discuss the difference between antemortem and postmortem inspection. (DOK 1)	
e.	Discuss federal and state regulations for inspection including exemptions. (DOK 1)	

STANDARDS

The National Restaurant Association's ServSafe Course Content

- SS1 Providing Safe Food
- SS2 The Microworld
- SS3 Contamination, Food Allergens, and Foodborne Illness
- SS4 The Safe Foodhandler
- SS5 The Flow of Food: An Introduction
- SS7 The Flow of Food: Storage
- SS8 The Flow of Food: Preparation
- SS10 Food Safety Management Systems
- SS11 Sanitary Facilities and Equipment
- SS12 Cleaning and Sanitizing
- SS14 Food Safety Regulation and Employee Training

Related Academic Standards

- R1 Interpret Graphic Information (forms, maps, reference sources)
- R2 Words in Context (same and opposite meaning)
- R3 Recall Information (details, sequence)
- R4 Construct Meaning (main idea, summary/paraphrase, compare–contrast, cause–effect)
- R5 Evaluate/Extend Meaning (fact/opinion, predict outcomes, point of view)
- M1 Addition of Whole Numbers (no regrouping, regrouping)
- M2 Subtraction of Whole Numbers (no regrouping, regrouping)
- M3 Multiplication of Whole Numbers (no regrouping, regrouping)
- M4 Division of Whole Numbers (no remainder, remainder)
- M5 Decimals (addition, subtraction, multiplication, division)
- M6 Fractions (addition, subtraction, multiplication, division)
- M7 Integers (addition, subtraction, multiplication, division)
- M8 Percents
- M9 Algebraic Operations
- A1 Numeration (ordering, place value, scientific notation)
- A2 Number Theory (ratio, proportion)
- A3 Data Interpretation (graph, table, chart, diagram)
- A4 Pre-Algebra and Algebra (equations, inequality)
- A5 Measurement (money, time, temperature, length, area, volume)
- A6 Geometry (angles, Pythagorean theory)
- A7 Computation in Context (whole numbers, decimals, fractions, algebraic operations)
- A8 Estimation (rounding, estimation)
- L1 Usage (pronoun, tense, subject–verb agreement, adjective, adverb)
- L2 Sentence Formation (fragments, run-on, clarity)
- L3 Paragraph Development (topic sentence, supporting sentence, sequence)
- L4 Capitalization (proper noun, titles)
- L5 Punctuation (comma, semicolon)
- L6 Writing Conventions (quotation marks, apostrophe, parts of a letter)
- S1 Vowel (short, long)
- S2 Consonant (variant spelling, silent letter)
- S3 Structural Unit (root, suffix)

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21st Century Skills

CSS1-21st Century Themes

- CS1 Global Awareness**
- CS2 Financial, Economic, Business, and Entrepreneurial Literacy**
- CS3 Civic Literacy**
- CS4 Health Literacy**
- CS5 Environmental Literacy**

CSS2-Learning and Innovation Skills

- CS6 Creativity and Innovation**

- CS7 Critical Thinking and Problem Solving
- CS8 Communication and Collaboration
- CSS3-Information, Media and Technology Skills
 - CS9 Information Literacy
 - CS10 Media Literacy
 - CS11 ICT Literacy
- CSS4-Life and Career Skills
 - CS12 Flexibility and Adaptability
 - CS13 Initiative and Self-Direction
 - CS14 Social and Cross-Cultural Skills
 - CS15 Productivity and Accountability
 - CS16 Leadership and Responsibility

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Course Name: Identification of Wholesale and Retail Cuts

Course Abbreviation: MTV 1214

Classification: Vocational–Technical Core

Description: This course consists of the identification of wholesale and retail cuts of meat. The course also includes preparation and serving of meat products. Background information is provided on dressing, chilling, storage, sanitation, inspection, grading, curing, and smoking procedures for different types of meat products. (4 sch: 8-hr lab)

Prerequisite: None

Competencies and Suggested Objectives	
1. Identify cuts of beef, pork, goats, wild game, and lamb. ^{SS8}	
a. List the lean wholesale cuts of beef, pork, goats, and lamb and the basic retail cuts obtained from each. ^(DOK 2)	
b. List the various cuts obtained from wild game. ^(DOK 1)	
c. Explain the terms family pack, individually quick frozen (IQF), vacuum pack, and tray pack. ^(DOK 1)	
d. Explain how to identify cuts of red meat by color, shape of bone, and muscle. ^(DOK 2)	
e. Discuss the three basic rules of meat cutting. ^(DOK 1)	
f. Explain how religious or ethnic requirements may influence choice of meat cuts. ^(DOK 2)	
g. Properly identify retail cuts of red meat and poultry for proper labeling after packaging. ^(DOK 2)	
h. Explain how to identify boneless retail cuts. ^(DOK 1)	
i. Discuss the basic thumb rules for breaking red meat animal and poultry carcasses into primal and sub-primal cuts. ^(DOK 2)	
j. Demonstrate the ability to identify and break down boxed primal cuts of beef and pork. ^(DOK 2)	
2. Prepare and serve meat products. ^{SS8}	
a. List and describe the dry heat methods of cookery. ^(DOK 2)	
b. List and describe the moist heat methods of cookery. ^(DOK 2)	
c. Explain which methods of cookery are recommended for retail beef cuts from the loin and rib and why. ^(DOK 2)	
d. Explain which methods of cookery are recommended for retail cuts of beef from the chuck and round and why. ^(DOK 2)	
e. Discuss the recommended cookery methods for various retail cuts of pork. ^(DOK 2)	
f. Describe how to measure the internal temperature of meat while it is cooking. ^(DOK 2)	
g. List the desired final internal temperatures for beef cooked rare, medium, and well done. ^(DOK 2)	
h. Explain to what degree of doneness to cook pork, chicken, goat, wild game, and lamb. ^(DOK 2)	
3. Explain the dressing and chilling procedures for red meat. ^{SS8}	
a. Describe the steps and procedures used in dressing beef, pork, goat, wild game, and lamb. ^(DOK 2)	

<ul style="list-style-type: none"> b. Define the term dressing percent and list the average dressing percentages for beef, hogs, goats, wild game, and lambs. (DOK 2) c. Explain what is meant by cooler shrink and what it averages in red meat animals. (DOK 2) d. List the proper cooler temperatures and chill times for red meat animals. (DOK 1) e. Define the term byproducts. (DOK 1) f. List some of the more important byproducts obtained when slaughtering red meat animals. (DOK 1) g. Demonstrate the ability to properly dress red meat animals. (DOK 2)
<ul style="list-style-type: none"> 4. Explain the procedures for curing and smoking different types of meat products. ^{SS8} <ul style="list-style-type: none"> a. List and describe three methods of curing meat. (DOK 2) b. Differentiate between stick pumping and arterial pumping and describe the difference in equipment used for each. (DOK 2) c. Define the terms dry cure and country cure. (DOK 1) d. Explain which type of wood is recommended for smoking meats. (DOK 1) e. Give the thumb rules for days of curing time per pound for hams and bacon. (DOK 1) f. Cite the smokehouse temperatures and internal temperatures for smoking country cured hams, pumped hams, bacon, and smoked sausage. (DOK 2) g. Explain what constitutes a fully cooked ham. (DOK 1) h. Demonstrate the ability to cure and smoke different meat items. (DOK 2)

STANDARDS

The National Restaurant Association's ServSafe Course Content

SS8 The Flow of Food: Preparation

Related Academic Standards

- R1 Interpret Graphic Information (forms, maps, reference sources)
- R2 Words in Context (same and opposite meaning)
- R3 Recall Information (details, sequence)
- R4 Construct Meaning (main idea, summary/paraphrase, compare–contrast, cause–effect)
- R5 Evaluate/Extend Meaning (fact/opinion, predict outcomes, point of view)
- M1 Addition of Whole Numbers (no regrouping, regrouping)
- M2 Subtraction of Whole Numbers (no regrouping, regrouping)
- M3 Multiplication of Whole Numbers (no regrouping, regrouping)
- M4 Division of Whole Numbers (no remainder, remainder)
- M5 Decimals (addition, subtraction, multiplication, division)
- M6 Fractions (addition, subtraction, multiplication, division)
- M7 Integers (addition, subtraction, multiplication, division)
- M8 Percents
- M9 Algebraic Operations
- A1 Numeration (ordering, place value, scientific notation)
- A2 Number Theory (ratio, proportion)

- A3 Data Interpretation (graph, table, chart, diagram)
- A4 Pre-Algebra and Algebra (equations, inequality)
- A5 Measurement (money, time, temperature, length, area, volume)
- A6 Geometry (angles, Pythagorean theory)
- A7 Computation in Context (whole numbers, decimals, fractions, algebraic operations)
- A8 Estimation (rounding, estimation)
- L1 Usage (pronoun, tense, subject–verb agreement, adjective, adverb)
- L2 Sentence Formation (fragments, run-on, clarity)
- L3 Paragraph Development (topic sentence, supporting sentence, sequence)
- L4 Capitalization (proper noun, titles)
- L5 Punctuation (comma, semicolon)
- L6 Writing Conventions (quotation marks, apostrophe, parts of a letter)
- S1 Vowel (short, long)
- S2 Consonant (variant spelling, silent letter)
- S3 Structural Unit (root, suffix)

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21st Century Skills

CSS1-21st Century Themes

- CS1 Global Awareness**
- CS2 Financial, Economic, Business and Entrepreneurial Literacy**
- CS3 Civic Literacy**
- CS4 Health Literacy**
- CS5 Environmental Literacy**

CSS2-Learning and Innovation Skills

- CS6 Creativity and Innovation**
- CS7 Critical Thinking and Problem Solving**
- CS8 Communication and Collaboration**

CSS3-Information, Media and Technology Skills

- CS9 Information Literacy**
- CS10 Media Literacy**
- CS11 ICT Literacy**

CSS4-Life and Career Skills

- CS12 Flexibility and Adaptability**
- CS13 Initiative and Self-Direction**
- CS14 Social and Cross-Cultural Skills**
- CS15 Productivity and Accountability**
- CS16 Leadership and Responsibility**

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Course Name: Preparation of Wholesale and Retail Cuts

Course Abbreviation: MTV 1224

Classification: Vocational–Technical Core

Description: This course is the study of breaking carcasses into wholesale boxed cuts of beef, pork, and lamb; preparing basic retail cuts from wholesale boxed cuts; boning procedures; and packaging. (4 sch: 8-hr lab)

Prerequisite: None

Competencies and Suggested Objectives	
1. Fabricate beef, pork, and lamb carcasses into wholesale box cuts. ^{SS8}	
a. Select appropriate knives for specific merchandising jobs. ^(DOK 2)	
b. Demonstrate proper safety methods while breaking meat. ^(DOK 2)	
c. Demonstrate proper sanitation and personal hygiene while processing meat. ^(DOK 2)	
d. Demonstrate the proper procedures for breaking beef, pork, and lamb carcasses into primal wholesale cuts. ^(DOK 2)	
e. Identify the breaking points for carcass fabrication into primal and sub-primal cuts. ^(DOK 1)	
f. Identify all primal and sub-primal cuts as they are removed from the carcasses. ^(DOK 1)	
2. Prepare the basic retail cuts from wholesale boxed cuts of beef, pork, and lamb. ^{SS8}	
a. Identify beef, pork, and lamb retail cuts using the most commonly used name. ^(DOK 1)	
b. List retail cuts of beef, pork, and lamb. ^(DOK 1)	
c. List retail cuts that come from each of the wholesale primal cuts. ^(DOK 1)	
d. Demonstrate the ability to tray retail cuts of beef, pork, and lamb. ^(DOK 2)	
e. Demonstrate the ability to tray retail cuts for specials and sales. ^(DOK 2)	
3. Demonstrate proper boning procedures for maximum profit. ^{SS8}	
a. Explain the proper way to store and rotate meat before it is boned. ^(DOK 2)	
b. Identify equipment and hand tools used in boning procedures. ^(DOK 1)	
c. Demonstrate the ability to properly sharpen knives. ^(DOK 2)	
d. Given various types of boneless meat, demonstrate the ability to make acceptable retail cuts. ^(DOK 2)	
e. Tray and wrap boneless retail cuts for maximum shelf life. ^(DOK 2)	
f. Demonstrate the relationship between sanitation and profit in boning. ^(DOK 2)	

STANDARDS

The National Restaurant Association's ServSafe Course Content

SS8 The Flow of Food: Preparation

Related Academic Standards

- R1 Interpret Graphic Information (forms, maps, reference sources)
- R2 Words in Context (same and opposite meaning)
- R3 Recall Information (details, sequence)
- R4 Construct Meaning (main idea, summary/paraphrase, compare–contrast, cause–effect)
- R5 Evaluate/Extend Meaning (fact/opinion, predict outcomes, point of view)
- M1 Addition of Whole Numbers (no regrouping, regrouping)
- M2 Subtraction of Whole Numbers (no regrouping, regrouping)
- M3 Multiplication of Whole Numbers (no regrouping, regrouping)
- M4 Division of Whole Numbers (no remainder, remainder)
- M5 Decimals (addition, subtraction, multiplication, division)
- M6 Fractions (addition, subtraction, multiplication, division)
- M7 Integers (addition, subtraction, multiplication, division)
- M8 Percents
- M9 Algebraic Operations
- A1 Numeration (ordering, place value, scientific notation)
- A2 Number Theory (ratio, proportion)
- A3 Data Interpretation (graph, table, chart, diagram)
- A4 Pre-Algebra and Algebra (equations, inequality)
- A5 Measurement (money, time, temperature, length, area, volume)
- A6 Geometry (angles, Pythagorean theory)
- A7 Computation in Context (whole numbers, decimals, fractions, algebraic operations)
- A8 Estimation (rounding, estimation)
- L1 Usage (pronoun, tense, subject–verb agreement, adjective, adverb)
- L2 Sentence Formation (fragments, run-on, clarity)
- L3 Paragraph Development (topic sentence, supporting sentence, sequence)
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- L5 Punctuation (comma, semicolon)
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21st Century Skills

CSS1-21st Century Themes

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- CS6 Creativity and Innovation**

- CS7 Critical Thinking and Problem Solving
- CS8 Communication and Collaboration
- CSS3-Information, Media and Technology Skills
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 - CS10 Media Literacy
 - CS11 ICT Literacy
- CSS4-Life and Career Skills
 - CS12 Flexibility and Adaptability
 - CS13 Initiative and Self-Direction
 - CS14 Social and Cross-Cultural Skills
 - CS15 Productivity and Accountability
 - CS16 Leadership and Responsibility

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- Schneller, T. (2009). *Meat identification, fabrication, utilization*. Clifton Park, NY: Cengage Learning.
- Scheneller, T., (2009). *Poultry: Identification, fabrication, utilization*. Clifton Park, NY: Delmar Cengage Learning.

Course Name: Merchandising of Poultry, Fish, Seafood, and Smoked Meats

Course Abbreviation: MTV 1234

Classification: Vocational–Technical Core

Description: This course includes cutting and merchandising poultry and fish products; merchandising of smoked meat counter; refrigeration; and display techniques of poultry, fish, seafood, and smoked meats. (4 sch: 8-hr lab)

Prerequisite: None

Competencies and Suggested Objectives	
1. Explain procedures for cutting and packaging poultry, fish, and seafood. ^{SS7, SS8, SS11}	
a. Demonstrate knowledge of customer preference in fresh and frozen fish, seafood, and poultry. ^(DOK 1)	
b. Identify methods of merchandising poultry. ^(DOK 1)	
c. Identify methods of merchandising fish and seafood. ^(DOK 1)	
d. Demonstrate ability to figure markup, add to wholesale price, and project a profit. ^(DOK 3)	
e. Describe the different types of fish and other seafood merchandise sold in a given area. ^(DOK 2)	
f. Describe the different types of poultry merchandise sold in a given area. ^(DOK 2)	
2. Discuss and demonstrate the display and rotation of the smoked meat case. ^{SS7, SS8, SS11}	
a. Define the term smoked meat as it applies to meat merchandising. ^(DOK 1)	
b. Recognize the different types of smoked meats that are merchandised in a given area. ^(DOK 2)	
c. Rotate the smoked meat to insure freshness. ^(DOK 2)	
d. Correlate the type of smoked meat with the season of the year. ^(DOK 1)	
e. Describe the types of packaging techniques used for smoked meat. ^(DOK 1)	
f. Recognize and identify the varieties of sausages and processed meats merchandised in a given area. ^(DOK 2)	
g. Properly display and maintain the smoked meats case. ^(DOK 2)	
h. Explain the percentage of the total meat sales which is generated by sausages and processed meats in a given store. ^(DOK 2)	
3. Display poultry and fish for greater profit. ^{SS7, SS8, SS11}	
a. Pack poultry for volume sales. ^(DOK 2)	
b. Demonstrate methods of fish and seafood preparation for eye appeal and palatability. ^(DOK 2)	
c. Tray fish in an eye appealing manner. ^(DOK 2)	
d. Cut up poultry and display parts. ^(DOK 2)	
e. Given various cuts of fish, a wrapping machine, and equipment, wrap the packages for a self-service display case. ^(DOK 2)	
f. Given various cuts of poultry, a wrapping machine, and equipment, wrap the packages for a self-service display case. ^(DOK 2)	
g. Given a cooler or other storage area, arrange stock and other goods so that air	

	circulation is not restricted in any way. ^(DOK 2)
h.	Given a thermostat-controlled display case, control the temperature. ^(DOK 2)
i.	Given packaged fish, seafood, and poultry trays and a cooler, handle the cooler so that the oldest products are used first. ^(DOK 2)
j.	Describe the proper storage temperatures for maximum storage life of meat, seafood, and poultry, using a cooler, display case, or freezer. ^(DOK 2)
k.	Given stock on hand and a record of previous sales, prepare orders for fish, seafood, and poultry. ^(DOK 2)
l.	Given proper cleaning and sanitizing solutions, demonstrate the proper procedures for cleaning cooler, cutting, and display areas. ^(DOK 2)

STANDARDS

The National Restaurant Association's ServSafe Course Content

- SS7 The Flow of Food: Storage
- SS8 The Flow of Food: Preparation
- SS11 Sanitary Facilities and Equipment

Related Academic Standards

- R1 Interpret Graphic Information (forms, maps, reference sources)
- R2 Words in Context (same and opposite meaning)
- R3 Recall Information (details, sequence)
- R4 Construct Meaning (main idea, summary/paraphrase, compare-contrast, cause-effect)
- R5 Evaluate/Extend Meaning (fact/opinion, predict outcomes, point of view)
- M1 Addition of Whole Numbers (no regrouping, regrouping)
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- M6 Fractions (addition, subtraction, multiplication, division)
- M7 Integers (addition, subtraction, multiplication, division)
- M8 Percents
- M9 Algebraic Operations
- A1 Numeration (ordering, place value, scientific notation)
- A2 Number Theory (ratio, proportion)
- A3 Data Interpretation (graph, table, chart, diagram)
- A4 Pre-Algebra and Algebra (equations, inequality)
- A5 Measurement (money, time, temperature, length, area, volume)
- A6 Geometry (angles, Pythagorean theory)
- A7 Computation in Context (whole numbers, decimals, fractions, algebraic operations)
- A8 Estimation (rounding, estimation)
- L1 Usage (pronoun, tense, subject-verb agreement, adjective, adverb)
- L2 Sentence Formation (fragments, run-on, clarity)

- L3 Paragraph Development (topic sentence, supporting sentence, sequence)
- L4 Capitalization (proper noun, titles)
- L5 Punctuation (comma, semicolon)
- L6 Writing Conventions (quotation marks, apostrophe, parts of a letter)
- S1 Vowel (short, long)
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21st Century Skills

CSS1-21st Century Themes

- CS1 Global Awareness**
- CS2 Financial, Economic, Business and Entrepreneurial Literacy**
- CS3 Civic Literacy**
- CS4 Health Literacy**
- CS5 Environmental Literacy**

CSS2-Learning and Innovation Skills

- CS6 Creativity and Innovation**
- CS7 Critical Thinking and Problem Solving**
- CS8 Communication and Collaboration**

CSS3-Information, Media and Technology Skills

- CS9 Information Literacy**
- CS10 Media Literacy**
- CS11 ICT Literacy**

CSS4-Life and Career Skills

- CS12 Flexibility and Adaptability**
- CS13 Initiative and Self-Direction**
- CS14 Social and Cross-Cultural Skills**
- CS15 Productivity and Accountability**
- CS16 Leadership and Responsibility**

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- Ainsworth, M., & America, Culinary. (2009). *Fish and seafood*. Clifton Park, NY: Cengage Learning.
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- Savell, J. W., & Smith, G. C. (2000). *Meat science laboratory manual* (7th ed.). Boston, MA: American Press.

Course Name: Display Pricing and Marketing Techniques

Course Abbreviation: MTV 1314

Classification: Vocational–Technical Core

Description: This course includes advanced merchandising techniques including wholesale purchasing, wholesale and retail meat pricing, and gross profit control yield data. (4 sch: 8-hr lab)

Prerequisite: None

Competencies and Suggested Objectives	
1. Determine wholesale and retail meat pricing. ^{SS6, SS7, SS8}	
a. Define supply and demand as pertaining to meat merchandising. ^(DOK 1)	
b. Recognize availability and price of wholesale meat items. ^(DOK 1)	
c. Demonstrate a running knowledge of the demand inventory and volume, and relate this to a reasonable profit. ^(DOK 2)	
d. Use a computerized electronic scale system to conduct a profit cutting test for gross profit control and yield data. ^(DOK 2)	
e. Demonstrate the improvement of profit through good merchandising techniques. ^(DOK 2)	
f. Plan an effective weekly sales campaign. ^(DOK 2)	
2. Explain how profit can be affected by amount of yield. ^{SS6, SS7, SS8}	
a. Define yield, and explain how it is usually quoted. ^(DOK 2)	
b. Demonstrate proper boning skills for maximum yield. ^(DOK 2)	
c. Demonstrate proper trimming skills according to store policies and guidelines for maximum yield. ^(DOK 2)	
d. Demonstrate the ability to purchase meat for minimum trim and maximum yield. ^(DOK 2)	
e. Explain how yield affects profit. ^(DOK 2)	
f. Explain how yield is affected by refrigeration and storage. ^(DOK 2)	

STANDARDS

The National Restaurant Association's ServSafe Course Content

- SS6 The Flow of Food: Purchasing and Receiving
- SS7 The Flow of Food: Storage
- SS8 The Flow of Food: Preparation

Related Academic Standards

- R1 Interpret Graphic Information (forms, maps, reference sources)
- R2 Words in Context (same and opposite meaning)
- R3 Recall Information (details, sequence)
- R4 Construct Meaning (main idea, summary/paraphrase, compare–contrast, cause–effect)

- R5 Evaluate/Extend Meaning (fact/opinion, predict outcomes, point of view)
- M1 Addition of Whole Numbers (no regrouping, regrouping)
- M2 Subtraction of Whole Numbers (no regrouping, regrouping)
- M3 Multiplication of Whole Numbers (no regrouping, regrouping)
- M4 Division of Whole Numbers (no remainder, remainder)
- M5 Decimals (addition, subtraction, multiplication, division)
- M6 Fractions (addition, subtraction, multiplication, division)
- M7 Integers (addition, subtraction, multiplication, division)
- M8 Percents
- M9 Algebraic Operations
- A1 Numeration (ordering, place value, scientific notation)
- A2 Number Theory (ratio, proportion)
- A3 Data Interpretation (graph, table, chart, diagram)
- A4 Pre-Algebra and Algebra (equations, inequality)
- A5 Measurement (money, time, temperature, length, area, volume)
- A6 Geometry (angles, Pythagorean theory)
- A7 Computation in Context (whole numbers, decimals, fractions, algebraic operations)
- A8 Estimation (rounding, estimation)
- L1 Usage (pronoun, tense, subject–verb agreement, adjective, adverb)
- L2 Sentence Formation (fragments, run-on, clarity)
- L3 Paragraph Development (topic sentence, supporting sentence, sequence)
- L4 Capitalization (proper noun, titles)
- L5 Punctuation (comma, semicolon)
- L6 Writing Conventions (quotation marks, apostrophe, parts of a letter)
- S1 Vowel (short, long)
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21st Century Skills

CSS1-21st Century Themes

- CS1 Global Awareness**
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- CS4 Health Literacy**
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CSS2-Learning and Innovation Skills

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- CS7 Critical Thinking and Problem Solving**
- CS8 Communication and Collaboration**

CSS3-Information, Media and Technology Skills

- CS9 Information Literacy**
- CS10 Media Literacy**
- CS11 ICT Literacy**

CSS4-Life and Career Skills

- CS12 Flexibility and Adaptability
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- CS15 Productivity and Accountability
- CS16 Leadership and Responsibility

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- Savell, J. W., & Smith, G. C. (2000). *Meat science laboratory manual* (7th ed.). Boston, MA: American Press.

Course Name: Display Pricing and Marketing Techniques II

Course Abbreviation: MTV 1324

Classification: Vocational–Technical Core

Description: This course includes advanced merchandising procedures including conducting cutting tests and forecasting gross profits. (4 sch: 8-hr lab)

Prerequisite: None

Competencies and Suggested Objectives	
1. Conduct cutting tests. ^{SS8}	
a. Define cutting test. ^(DOK 1)	
b. Conduct a cutting test on all wholesale primal cuts that are merchandised. ^(DOK 3)	
c. Conduct a cutting test on the principal different methods used to cut meat. ^(DOK 3)	
2. Forecast gross profits. ^{SS8}	
a. Define margin, markup, and shrinkage as they apply to meat merchandising. ^(DOK 1)	
b. Calculate gross profit for specified time. ^(DOK 2)	
c. Keep accurate records on cutting tests in order to forecast profits. ^(DOK 2)	
d. Define the term projection as it applies to gross profits. ^(DOK 1)	
e. Forecast gross profits. ^(DOK 2)	

STANDARDS

The National Restaurant Association's ServSafe Course Content

SS8 The Flow of Food: Preparation

Related Academic Standards

- R1 Interpret Graphic Information (forms, maps, reference sources)
- R2 Words in Context (same and opposite meaning)
- R3 Recall Information (details, sequence)
- R4 Construct Meaning (main idea, summary/paraphrase, compare–contrast, cause–effect)
- R5 Evaluate/Extend Meaning (fact/opinion, predict outcomes, point of view)
- M1 Addition of Whole Numbers (no regrouping, regrouping)
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- M5 Decimals (addition, subtraction, multiplication, division)
- M6 Fractions (addition, subtraction, multiplication, division)
- M7 Integers (addition, subtraction, multiplication, division)
- M8 Percents
- M9 Algebraic Operations

- A1 Numeration (ordering, place value, scientific notation)
- A2 Number Theory (ratio, proportion)
- A3 Data Interpretation (graph, table, chart, diagram)
- A4 Pre-Algebra and Algebra (equations, inequality)
- A5 Measurement (money, time, temperature, length, area, volume)
- A6 Geometry (angles, Pythagorean theory)
- A7 Computation in Context (whole numbers, decimals, fractions, algebraic operations)
- A8 Estimation (rounding, estimation)
- L1 Usage (pronoun, tense, subject–verb agreement, adjective, adverb)
- L2 Sentence Formation (fragments, run-on, clarity)
- L3 Paragraph Development (topic sentence, supporting sentence, sequence)
- L4 Capitalization (proper noun, titles)
- L5 Punctuation (comma, semicolon)
- L6 Writing Conventions (quotation marks, apostrophe, parts of a letter)
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Course Name: Advanced Meat Merchandising I

Course Abbreviation: MTV 1414

Classification: Vocational–Technical Core

Description: This course is a study of portion control, nutritional values of red meat and poultry, steps and cycles associated with marketing red meat and poultry, and factors that affect meat prices. (4 sch: 8-hr lab)

Prerequisite: None

Competencies and Suggested Objectives	
1. Explain portion control as it applies to the food service industry. ^{SS8, SS12}	
a. Explain why portion control is so important in the food service industry. ^(DOK 1)	
b. Cut retail cuts of beef according to portion control principles. ^(DOK 2)	
c. Cut retail cuts of pork according to portion control principles. ^(DOK 2)	
d. Cut retail cuts of lamb according to portion control principles. ^(DOK 2)	
e. Cut retail cuts of poultry according to portion control principles. ^(DOK 2)	
f. Cut wild game according to portion control principles. ^(DOK 2)	
g. Cut goat according to portion control principles. ^(DOK 2)	
2. Describe and list nutrient values of red meats and poultry in the human diet. ^{SS12}	
a. List the most important nutrient values of meat as they contribute to the human diet. ^(DOK 1)	
b. List the most important nutrient values of poultry as they contribute to the human diet. ^(DOK 1)	
3. Recognize the steps and cycles associated with the marketing of red meat and poultry. ^{SS12}	
a. Trace steps in meat merchandising on a flowchart to show all the steps in marketing. ^(DOK 1)	
b. List the steps involved in production of red meat animals including length of gestation, generation intervals, marketing cycles, and others. ^(DOK 1)	
c. List the steps involved in production of poultry including length of gestation, generation intervals, marketing cycles, and others. ^(DOK 1)	
d. Describe the edible and inedible byproducts of the meat industry. ^(DOK 1)	
4. Discuss factors affecting meat prices. ^{SS12}	
a. Explain how the cost of energy affects the cost of meat. ^(DOK 1)	
b. Explain how the cost of grain and other feed stuffs affects the cost of meat. ^(DOK 1)	
c. Explain how adverse weather conditions, national disasters, and other factors affect the cost of meat. ^(DOK 1)	
d. Describe how the state of other industries (steel, paper, chemical, and agriculture) affects the meat industry. ^(DOK 1)	
e. Explain how government agencies such as the Occupational Safety and Health Administration and the Food and Drug Administration affect the meat industry. ^(DOK 1)	

STANDARDS

The National Restaurant Association's ServSafe Course Content

SS8 The Flow of Food: Preparation
 SS12 Cleaning and Sanitizing

Related Academic Standards

- R1 Interpret Graphic Information (forms, maps, reference sources)
- R2 Words in Context (same and opposite meaning)
- R3 Recall Information (details, sequence)
- R4 Construct Meaning (main idea, summary/paraphrase, compare–contrast, cause–effect)
- R5 Evaluate/Extend Meaning (fact/opinion, predict outcomes, point of view)
- M1 Addition of Whole Numbers (no regrouping, regrouping)
- M2 Subtraction of Whole Numbers (no regrouping, regrouping)
- M3 Multiplication of Whole Numbers (no regrouping, regrouping)
- M4 Division of Whole Numbers (no remainder, remainder)
- M5 Decimals (addition, subtraction, multiplication, division)
- M6 Fractions (addition, subtraction, multiplication, division)
- M7 Integers (addition, subtraction, multiplication, division)
- M8 Percents
- M9 Algebraic Operations
- A1 Numeration (ordering, place value, scientific notation)
- A2 Number Theory (ratio, proportion)
- A3 Data Interpretation (graph, table, chart, diagram)
- A4 Pre-Algebra and Algebra (equations, inequality)
- A5 Measurement (money, time, temperature, length, area, volume)
- A6 Geometry (angles, Pythagorean theory)
- A7 Computation in Context (whole numbers, decimals, fractions, algebraic operations)
- A8 Estimation (rounding, estimation)
- L1 Usage (pronoun, tense, subject–verb agreement, adjective, adverb)
- L2 Sentence Formation (fragments, run-on, clarity)
- L3 Paragraph Development (topic sentence, supporting sentence, sequence)
- L4 Capitalization (proper noun, titles)
- L5 Punctuation (comma, semicolon)
- L6 Writing Conventions (quotation marks, apostrophe, parts of a letter)
- S1 Vowel (short, long)
- S2 Consonant (variant spelling, silent letter)
- S3 Structural Unit (root, suffix)

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21st Century Skills

CSS1-21st Century Themes

- CS1 Global Awareness**
- CS2 Financial, Economic, Business and Entrepreneurial Literacy**
- CS3 Civic Literacy**
- CS4 Health Literacy**
- CS5 Environmental Literacy**

CSS2-Learning and Innovation Skills

- CS6 Creativity and Innovation**
- CS7 Critical Thinking and Problem Solving**
- CS8 Communication and Collaboration**

CSS3-Information, Media and Technology Skills

- CS9 Information Literacy**
- CS10 Media Literacy**
- CS11 ICT Literacy**

CSS4-Life and Career Skills

- CS12 Flexibility and Adaptability**
- CS13 Initiative and Self-Direction**
- CS14 Social and Cross-Cultural Skills**
- CS15 Productivity and Accountability**
- CS16 Leadership and Responsibility**

SUGGESTED REFERENCES

Aberle, E. D., Forrest, J. C., Gerrard, D. E., & Mills, E. W. (2001). *Principles of meat science* (4th ed.). Dubuque, IA: Kendall/Hunt.

Davis, G. W. (n.d.). *Beef retail cut ID* [Video]. Lubbock, TX: Creative Education Video.

Davis, G. W. (n.d.). *Lamb retail cut ID* [Video]. Lubbock, TX: Creative Education Video.

Davis, G. W. (n.d.). *Pork retail cut ID* [Video]. Lubbock, TX: Creative Education Video.

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Romans, J. R., Costello, W. J., Carlson, C. W., & Greaser, M. L. (2001). *The meat we eat* (14th ed.). Danville, IL: Interstate.

Savell, J. W., & Smith, G. C. (2000). *Meat science laboratory manual* (7th ed.). Boston, MA: American Press.

Course Name: Advanced Meat Merchandising II

Course Abbreviation: MTV 1424

Classification: Vocational–Technical Core

Description: This course is a special study of meat merchandising as it affects the many different phases of the meat industry. The course includes salesmanship and customer relations. (4 sch: 8-hr lab)

Prerequisite: None

Competencies and Suggested Objectives	
1. Recognize the importance of good salesmanship. ^{SS7}	
a. Demonstrate how personal attitude affects selling. ^(DOK 1)	
b. Describe how to have a good working knowledge of the clientele in a given specific sales area. ^(DOK 1)	
c. Demonstrate a good customer and meat salesperson relationship. ^(DOK 2)	
d. Demonstrate effective communication techniques in selling meat. ^(DOK 2)	
2. Identify factors that affect maximum sales. ^{SS7}	
a. Demonstrate the most effective way to merchandise meat for maximum sales. ^(DOK 2)	
b. List advantages and disadvantages of boneless cuts, and describe how they affect profits. ^(DOK 2)	
c. Demonstrate the maintenance of the display counter for attractive appearance and maximum sales. ^(DOK 2)	
d. Demonstrate awareness of seasonal trends and meat cycles as they affect purchasing and pricing of meats. ^(DOK 2)	

STANDARDS

The National Restaurant Association's ServSafe Course Content

SS7 The Flow of Food: Storage

Related Academic Standards

- R1 Interpret Graphic Information (forms, maps, reference sources)
- R2 Words in Context (same and opposite meaning)
- R3 Recall Information (details, sequence)
- R4 Construct Meaning (main idea, summary/paraphrase, compare–contrast, cause–effect)
- R5 Evaluate/Extend Meaning (fact/opinion, predict outcomes, point of view)
- M1 Addition of Whole Numbers (no regrouping, regrouping)
- M2 Subtraction of Whole Numbers (no regrouping, regrouping)
- M3 Multiplication of Whole Numbers (no regrouping, regrouping)
- M4 Division of Whole Numbers (no remainder, remainder)

- M5 Decimals (addition, subtraction, multiplication, division)
- M6 Fractions (addition, subtraction, multiplication, division)
- M7 Integers (addition, subtraction, multiplication, division)
- M8 Percents
- M9 Algebraic Operations
- A1 Numeration (ordering, place value, scientific notation)
- A2 Number Theory (ratio, proportion)
- A3 Data Interpretation (graph, table, chart, diagram)
- A4 Pre-Algebra and Algebra (equations, inequality)
- A5 Measurement (money, time, temperature, length, area, volume)
- A6 Geometry (angles, Pythagorean theory)
- A7 Computation in Context (whole numbers, decimals, fractions, algebraic operations)
- A8 Estimation (rounding, estimation)
- L1 Usage (pronoun, tense, subject–verb agreement, adjective, adverb)
- L2 Sentence Formation (fragments, run-on, clarity)
- L3 Paragraph Development (topic sentence, supporting sentence, sequence)
- L4 Capitalization (proper noun, titles)
- L5 Punctuation (comma, semicolon)
- L6 Writing Conventions (quotation marks, apostrophe, parts of a letter)
- S1 Vowel (short, long)
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21st Century Skills

CSS1-21st Century Themes

- CS1 Global Awareness**
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- CS3 Civic Literacy**
- CS4 Health Literacy**
- CS5 Environmental Literacy**

CSS2-Learning and Innovation Skills

- CS6 Creativity and Innovation**
- CS7 Critical Thinking and Problem Solving**
- CS8 Communication and Collaboration**

CSS3-Information, Media and Technology Skills

- CS9 Information Literacy**
- CS10 Media Literacy**
- CS11 ICT Literacy**

CSS4-Life and Career Skills

- CS12 Flexibility and Adaptability**
- CS13 Initiative and Self-Direction**
- CS14 Social and Cross-Cultural Skills**
- CS15 Productivity and Accountability**
- CS16 Leadership and Responsibility**

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- Savell, J. W., & Smith, G. C. (2000). *Meat science laboratory manual* (7th ed.). Boston, MA: American Press.
- Weiss, E., & Weiss, H. (1991). *Catering handbook*. New York, NY: John Wiley & Sons.

Course Name: Catering, Food Preparation, and Value Added Products

Course Abbreviation: MTV 1514

Classification: Vocational–Technical Core

Description: This course includes basic information about the catering industry including types of catering services, how to start a business, selling catering services, food safety, and arranging specific catering events. The course also includes basic information about the trend toward marketing value-added products. (4 sch: 8-hr lab)

Prerequisite: None

Competencies and Suggested Objectives	
1. Discuss the basic types of catering services. ^{SS1, SS2, SS3, SS4, SS5, SS6, SS7, SS8, SS9, SS10, SS11, SS12}	
a. Discuss the advantages and disadvantages of catered banquet hall type service. ^(DOK 1)	
b. Discuss the advantages and disadvantages of off-premises catering. ^(DOK 1)	
c. Discuss the advantages and disadvantages of mobile-unit catering. ^(DOK 1)	
2. Describe how to start a catering business.	
a. List and describe the laws and regulations necessary to start or set up a catering business. ^(DOK 1)	
b. Discuss the types of equipment needed to set up a catering business. ^(DOK 1)	
c. Describe the types of staff or personnel required to set up a catering business. ^(DOK 1)	
d. Discuss the basic business practices required to set up a catering business. ^(DOK 1)	
3. Explain how to sell catering services to the public. ^{SS1}	
a. Discuss the types of advertising available to sell catering services. ^(DOK 1)	
b. Discuss the importance of public relations in promoting catering services. ^(DOK 1)	
4. Examine the importance of food safety in the catering business. ^{SS1, SS2, SS3, SS4, SS5, SS6, SS7, SS8, SS9, SS10, SS11, SS12}	
a. Discuss the proper temperatures required during cooking and transport of food products. ^(DOK 1)	
b. Practice quality assurance in the purchase of all materials used in the catering business. ^(DOK 2)	
c. Practice proper sanitation procedures from food preparation to presentation. ^(DOK 3)	
d. Discuss accident prevention in the kitchen, dining room, and on-the-road. ^(DOK 1)	
5. Explain the importance of arranging the catered event. ^{SS10, SS12}	
a. Discuss and practice estimation of costs for a specific event. ^(DOK 2)	
b. Discuss and demonstrate how to prepare a menu. ^(DOK 2)	
c. Estimate quantities of food required for a specific event. ^(DOK 2)	
d. Arrange the room for a specific event. ^(DOK 2)	
e. Select a method of table setting and service. ^(DOK 1)	
f. Allocate time when given a specific room and catered affair. ^(DOK 2)	
6. Discuss the emerging trends in value-added products. ^{SS8}	
a. Define value-added products. ^(DOK 1)	
b. Discuss the trend toward marketing value-added products as a convenience item in retail stores. ^(DOK 2)	

- c. Describe recipes and ideas for convenience packs that include meat and all other required ingredients including seasoning. ^(DOK 2)
- d. Discuss further processing to make value-added products at the store level. ^(DOK 1)
- e. Discuss the profitability of value-added products. ^(DOK 2)

STANDARDS

The National Restaurant Association's ServSafe Course Content

- SS1 Providing Safe Food
- SS2 The Microworld
- SS3 Contamination, Food Allergens, and Foodborne Illness
- SS4 The Safe Foodhandler
- SS5 The Flow of Food: An Introduction
- SS6 The Flow of Food: Purchasing and Receiving
- SS7 The Flow of Food: Storage
- SS8 The Flow of Food: Preparation
- SS9 The Flow of Food: Service
- SS10 Food Safety Management Systems
- SS11 Sanitary Facilities and Equipment
- SS12 Cleaning and Sanitizing

Related Academic Standards

- R1 Interpret Graphic Information (forms, maps, reference sources)
- R2 Words in Context (same and opposite meaning)
- R3 Recall Information (details, sequence)
- R4 Construct Meaning (main idea, summary/paraphrase, compare-contrast, cause-effect)
- R5 Evaluate/Extend Meaning (fact/opinion, predict outcomes, point of view)
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- M8 Percents
- M9 Algebraic Operations
- A1 Numeration (ordering, place value, scientific notation)
- A2 Number Theory (ratio, proportion)
- A3 Data Interpretation (graph, table, chart, diagram)
- A4 Pre-Algebra and Algebra (equations, inequality)
- A5 Measurement (money, time, temperature, length, area, volume)
- A6 Geometry (angles, Pythagorean theory)
- A7 Computation in Context (whole numbers, decimals, fractions, algebraic operations)

- A8 Estimation (rounding, estimation)
- L1 Usage (pronoun, tense, subject–verb agreement, adjective, adverb)
- L2 Sentence Formation (fragments, run-on, clarity)
- L3 Paragraph Development (topic sentence, supporting sentence, sequence)
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21st Century Skills

CSS1-21st Century Themes

- CS1 Global Awareness**
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- CS6 Creativity and Innovation**
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- CS12 Flexibility and Adaptability**
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- Weiss, E., & Weiss, H. (1991). *Catering handbook*. New York, NY: John Wiley & Sons.

Course Name: Food Safety

Course Abbreviation: MTV 1522

Classification: Vocational–Technical Core

Description: This course includes basic information related to food safety. (2 sch: 2-hr lecture)

Prerequisites: Completion of one semester of coursework in PS Meat Merchandising program

Competencies and Suggested Objectives	
1. Discuss issues related to food safety.	SS1, SS2, SS3, SS4, SS5, SS6, SS7, SS8, SS9, SS10, SS11, SS12, SS13, SS14, SS15
a. Describe the dangers of foodborne illness, methods for prevention, and the food safety responsibilities of food workers.	(DOK 2)
b. Discuss the personal hygiene requirements of food handlers.	(DOK 1)
c. Examine methods for maintaining sanitary facilities and equipment and managing pests.	(DOK 2)
d. Describe food safety regulations and standards, including the government regulatory system for food, the food code, and the foodservice inspection process.	(DOK 2)
2. Investigate threats to food safety.	SS1, SS2, SS3, SS4, SS5, SS6, SS7, SS8, SS9, SS10, SS11, SS12, SS13, SS14
a. Describe microorganisms, including bacteria, viruses, parasites, and fungi, that threaten food safety.	(DOK 2)
b. Discuss types of contamination, food allergens, and foodborne illness.	(DOK 1)
c. Discuss methods of preventing cross-contamination.	(DOK 1)
d. Examine the importance of controlling time and temperature.	(DOK 2)
3. Investigate the flow of food.	SS1, SS2, SS3, SS4, SS5, SS6, SS7, SS8, SS9, SS10, SS11, SS12, SS13, SS14
a. Discuss principles of purchasing, receiving, and inspecting food.	(DOK 1)
b. Examine general storage guidelines and types of storage.	(DOK 1)
c. Discuss preparation processes: handling, thawing, preparing, cooking, cooling, and reheating food.	(DOK 2)
d. Discuss principles for holding and serving food and types of foodservice operations.	(DOK 2)
4. Examine food safety systems.	SS1, SS2, SS3, SS4, SS5, SS6, SS7, SS8, SS9, SS10, SS11, SS12, SS13, SS14
a. Describe types of food safety programs.	(DOK 2)
b. Discuss active managerial control.	(DOK 1)
c. Examine principles of HACCP.	(DOK 2)
d. Discuss crisis management.	(DOK 1)

STANDARDS

The National Restaurant Association's ServSafe Course Content

SS1 Providing Safe Food

SS2 The Microworld

SS3 Contamination, Food Allergens, and Foodborne Illness

- SS4 The Safe Foodhandler
- SS5 The Flow of Food: An Introduction
- SS6 The Flow of Food: Purchasing and Receiving
- SS7 The Flow of Food: Storage
- SS8 The Flow of Food: Preparation
- SS9 The Flow of Food: Service
- SS10 Food Safety Management Systems
- SS11 Sanitary Facilities and Equipment
- SS12 Cleaning and Sanitizing
- SS13 Integrated Pest Management
- SS14 Food Safety Regulation and Employee Training
- SS15 Employee Food Safety Training

Related Academic Standards

- R1 Interpret Graphic Information (forms, maps, reference sources)
- R2 Words in Context (same and opposite meaning)
- R3 Recall Information (details, sequence)
- R4 Construct Meaning (main idea, summary/paraphrase, compare–contrast, cause–effect)
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- M8 Percents
- M9 Algebraic Operations
- A1 Numeration (ordering, place value, scientific notation)
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- A3 Data Interpretation (graph, table, chart, diagram)
- A4 Pre-Algebra and Algebra (equations, inequality)
- A5 Measurement (money, time, temperature, length, area, volume)
- A6 Geometry (angles, Pythagorean theory)
- A7 Computation in Context (whole numbers, decimals, fractions, algebraic operations)
- A8 Estimation (rounding, estimation)
- L1 Usage (pronoun, tense, subject–verb agreement, adjective, adverb)
- L2 Sentence Formation (fragments, run-on, clarity)
- L3 Paragraph Development (topic sentence, supporting sentence, sequence)
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- Weiss, E., & Weiss, H. (1991). *Catering handbook*. New York, NY: John Wiley & Sons.

Recommended Tools and Equipment

CAPITALIZED ITEMS

1. Band saw (1 per program)
2. Colosimo's press (1 per program)
3. Cooler, walk-in, 10 ft x 15 ft (1 per program)
4. Dehairing machine (1 per program)
5. Dryer, clothes (1 per program)
6. Freezer, walk-in, 10 ft x 15 ft (1 per program)
7. Grinder (1 per program)
8. Hand wash basin, stainless steel (1 per program)
9. Hot water heater, 100-gal size (1 per program)
10. Ice maker, 800 lb capacity (1 per program)
11. Immobilizer (1 per program)
12. Kemtec smoker-oven (1 per program)
13. Mixer (1 per program)
14. Patty machine with table (1 per program)
15. Pickle pump (1 per program)
16. Platform scales with table (1 per program)
17. Power washer (1 per program)
18. Rail system with hoist, scales, and easy drop off (1 per program)
19. Saw, carcass split (1 per program)
20. Sink, three compartment, stainless steel (1 per program)
21. Slicer, automatic, with table (1 per program)
22. Slicer, manual, with table (1 per program)
23. Smoker truck, stainless steel (1 per program)
24. Stuffer, hydraulic (1 per program)
25. Stuffing table, 3 ft x 8 ft (1 per program)
26. Table, boning, 3 ft x 8 ft (2 per program)
27. Table, break down, 3 ft x 8 ft (2 per program)
28. Table, stainless steel, 3 ft x 8 ft (3 per program)
29. Tenderizer with table (1 per program)
30. Vacuum packing machine with table (1 per program)
31. Vacuum tumbler (1 per program)
32. Washer, clothes (1 per program)

NON-CAPITALIZED ITEMS

1. Aprons (15 per program)
2. Band saw blades (10 per program)
3. Boning knives (15 per program)
4. Brine vats (3 per program)
5. Butcher knives (5 per program)
6. First aid kit with supplies for 20 students (1 per program)
7. Freezer baskets (30 per program)

8. Freezer trucks (4 per program)
9. Gambrel (15 per program)
10. Grinder knives (3 per program)
11. Handsaw (2 per program)
12. Handsaw blades (10 per program)
13. Heat seal machine (2 per program)
14. High pressure water hose, 50 ft (1 per program)
15. Knife and steel racks (2 per program)
16. Knife and steel scabbards (10 per program)
17. Knife sterilizer (2 per program)
18. Paper racks (2 per program)
19. Plastic lugs (20 per program)
20. Portable lugs (20 per program)
21. Rail hooks (30 per program)
22. Safety gloves (5 pairs per program)
23. Salinometer (1 per program)
24. Sharpening hones (1 per program)
25. Skinning knives (6 per program)
26. Steels (2 per program)
27. Stocking hooks (30 per program)
28. Thermometer (10 per program)
29. Weight scales, small (2 per program)

RECOMMENDED INSTRUCTIONAL AIDS

It is recommended that instructors have access to the following items:

1. A/V stand (1 per program)
2. Computer (1 per program)
3. Monitor, 25 in. color (1 per program)
4. Printer (1 per program)
5. Projector, slide (2 per program)
6. Screen, projection (1 per program)
7. VCR (1 per program)

Assessment

Blueprint

This program is assessed using the MS-CPAS. The following blueprint summary contains the competencies that are measured when assessing this program. Competencies are grouped into *clusters*, and a weight is given to each cluster to determine the number of items needed from each cluster. The numbers of C1s and C2s (item difficulty levels) are also indicated on the blueprint.

Please visit <http://info.rcu.msstate.edu/services/curriculum.asp> to download the blueprint that accompanies this curriculum.

Appendix A: The National Restaurant Association's ServSafe Course Content¹

ServSafe Course Content

- SS1 Providing Safe Food
 - Foodborne Illness
 - Preventing Foodborne Illness
 - Key Practices for Ensuring Food Safety
 - The Food Safety Responsibilities of a Manager
- SS2 The Microworld
 - Pathogens
 - Viruses
 - Bacteria
 - Parasites
 - Fungi
 - Biological Toxins
 - Emerging Pathogens and Issues
- SS3 Contamination, Food Allergens, and Foodborne Illness
 - Chemical Contaminants
 - Physical Contaminants
 - The Deliberate Contamination of Food
 - Food Allergens
- SS4 The Safe Foodhandler
 - How Foodhandlers Can Contaminate Food
 - Diseases Not Transmitted Through Food
 - Components of a Good Personal Hygiene Program
 - Management's Role in a Personal Hygiene Program
- SS5 The Flow of Food: An Introduction
 - Preventing Cross-Contamination
 - Time and Temperature Control
- SS6 The Flow of Food: Purchasing and Receiving
 - Choosing a Supplier
 - Inspection Procedures
 - Receiving and Inspecting Specific Food
- SS7 The Flow of Food: Storage

¹ National Restaurant Association. (2010). *ServSafe course content*. Retrieved April 27, 2010, from <http://www.servsafe.com/>

- General Storage Guidelines
 - Types of Storage
 - Storage Techniques
 - Storing Specific Food
- SS8 The Flow of Food: Preparation
 - Thawing Food
 - Preparing Specific Food
 - Cooking Food
 - Cooking Requirements for Specific Food
 - Cooling Food
 - Reheating Food
- SS9 The Flow of Food: Service
 - Holding Food for Service
 - Serving Food Safely
 - Off-Site Service
- SS10 Food Safety Management Systems
 - Prerequisite Food Safety Programs
 - Active Managerial Control
 - HACCP
 - Crisis Management
- SS11 Sanitary Facilities and Equipment
 - Designing a Sanitary Establishment
 - Considerations for Other Areas of the Facility
 - Sanitation Standards for Equipment
 - Installing and Maintaining Kitchen Equipment
 - Utilities
- SS12 Cleaning and Sanitizing
 - Cleaning vs. Sanitizing
 - Cleaning
 - Sanitizing
 - Machine Dishwashing
 - Manual Dishwashing
 - Cleaning the Premises
 - Tools for Cleaning
 - Storing Utensils, Tableware, and Equipment
 - Using Foodservice Chemicals
 - Developing a Cleaning Program
- SS13 Integrated Pest Management
 - The Integrated Pest Management (IPM) Program
 - Identifying Pests

Working with a Pest Control Operator (PCO)
Treatment
Control Measures
Using and Storing Pesticides

- SS14 Food Safety Regulation and Employee Training
Objectives of a Foodservice Inspection Program
Government Regulatory System for Food
The *FDA* Food Code
The Inspection Process
Self-Inspections
Federal Regulatory Agencies
Voluntary Controls within the Industry
- SS15 Employee Food Safety Training
Training Staff
Training Delivery Methods

Appendix B: Related Academic Standards²

Reading

- R1 Interpret Graphic Information (forms, maps, reference sources)
- R2 Words in Context (same and opposite meaning)
- R3 Recall Information (details, sequence)
- R4 Construct Meaning (main idea, summary/paraphrase, compare–contrast, cause–effect)
- R5 Evaluate/Extend Meaning (fact/opinion, predict outcomes, point of view)

Mathematics Computation

- M1 Addition of Whole Numbers (no regrouping, regrouping)
- M2 Subtraction of Whole Numbers (no regrouping, regrouping)
- M3 Multiplication of Whole Numbers (no regrouping, regrouping)
- M4 Division of Whole Numbers (no remainder, remainder)
- M5 Decimals (addition, subtraction, multiplication, division)
- M6 Fractions (addition, subtraction, multiplication, division)
- M7 Integers (addition, subtraction, multiplication, division)
- M8 Percents
- M9 Algebraic Operations

Applied Mathematics

- A1 Numeration (ordering, place value, scientific notation)
- A2 Number Theory (ratio, proportion)
- A3 Data Interpretation (graph, table, chart, diagram)
- A4 Pre-Algebra and Algebra (equations, inequality)
- A5 Measurement (money, time, temperature, length, area, volume)
- A6 Geometry (angles, Pythagorean theory)
- A7 Computation in Context (whole numbers, decimals, fractions, algebraic operations)
- A8 Estimation (rounding, estimation)

Language

- L1 Usage (pronoun, tense, subject–verb agreement, adjective, adverb)
- L2 Sentence Formation (fragments, run-on, clarity)
- L3 Paragraph Development (topic sentence, supporting sentence, sequence)
- L4 Capitalization (proper noun, titles)
- L5 Punctuation (comma, semicolon)
- L6 Writing Conventions (quotation marks, apostrophe, parts of a letter)

Spelling

- S1 Vowel (short, long)
- S2 Consonant (variant spelling, silent letter)
- S3 Structural Unit (root, suffix)

² CTB/McGraw-Hill LLC. (2005). *Tests of adult basic education, forms 7 and 8*. Monterey, CA: Author. Reproduced with permission of CTB/McGraw-Hill LLC. TABE is a registered trademark of The McGraw-Hill Companies, Inc. Copyright © 2005 by CTB/McGraw-Hill LLC. Reproduction of this material is permitted for educational purposes only.

Appendix C: 21st Century Skills³

CSS1-21st Century Themes

CS1 Global Awareness

1. Using 21st century skills to understand and address global issues
2. Learning from and working collaboratively with individuals representing diverse cultures, religions and lifestyles in a spirit of mutual respect and open dialogue in personal, work and community contexts
3. Understanding other nations and cultures, including the use of non-English languages

CS2 Financial, Economic, Business and Entrepreneurial Literacy

1. Knowing how to make appropriate personal economic choices
2. Understanding the role of the economy in society
3. Using entrepreneurial skills to enhance workplace productivity and career options

CS3 Civic Literacy

1. Participating effectively in civic life through knowing how to stay informed and understanding governmental processes
2. Exercising the rights and obligations of citizenship at local, state, national and global levels
3. Understanding the local and global implications of civic decisions

CS4 Health Literacy

1. Obtaining, interpreting and understanding basic health information and services and using such information and services in ways that enhance health
2. Understanding preventive physical and mental health measures, including proper diet, nutrition, exercise, risk avoidance and stress reduction
3. Using available information to make appropriate health-related decisions
4. Establishing and monitoring personal and family health goals
5. Understanding national and international public health and safety issues

CS5 Environmental Literacy

1. Demonstrate knowledge and understanding of the environment and the circumstances and conditions affecting it, particularly as relates to air, climate, land, food, energy, water and ecosystems
2. Demonstrate knowledge and understanding of society's impact on the natural world (e.g., population growth, population development, resource consumption rate, etc.)
3. Investigate and analyze environmental issues, and make accurate conclusions about effective solutions
4. Take individual and collective action towards addressing environmental challenges (e.g., participating in global actions, designing solutions that inspire action on environmental issues)

³ *21st century skills*. (n.d.). Washington, DC: Partnership for 21st Century Skills.

CSS2-Learning and Innovation Skills

CS6 Creativity and Innovation

1. Think Creatively
2. Work Creatively with Others
3. Implement Innovations

CS7 Critical Thinking and Problem Solving

1. Reason Effectively
2. Use Systems Thinking
3. Make Judgments and Decisions
4. Solve Problems

CS8 Communication and Collaboration

1. Communicate Clearly
2. Collaborate with Others

CSS3-Information, Media and Technology Skills

CS9 Information Literacy

1. Access and Evaluate Information
2. Use and Manage Information

CS10 Media Literacy

1. Analyze Media
2. Create Media Products

CS11 ICT Literacy

1. Apply Technology Effectively

CSS4-Life and Career Skills

CS12 Flexibility and Adaptability

1. Adapt to change
2. Be Flexible

CS13 Initiative and Self-Direction

1. Manage Goals and Time
2. Work Independently
3. Be Self-directed Learners

CS14 Social and Cross-Cultural Skills

1. Interact Effectively with others
2. Work Effectively in Diverse Teams

CS15 Productivity and Accountability

1. Manage Projects
2. Produce Results

CS16 Leadership and Responsibility

1. Guide and Lead Others
2. Be Responsible to Others